

Apisa lamborni sp. nov.

♂. Entirely purplish sooty black with four semihyaline whitish spots on forewing, one on hindwing.

Length of forewing : 12 mm.

Hab. Lagos, March 15, 1912 (W. A. Lamborn).

SOME NOTES ON THE GENERA *ZAGLOSSUS* AND
TACHYGLOSSUS.

BY THE HON. WALTER ROTHSCHILD, PH.D., F.R.S.

WHEN I wrote the short note on *Zaglossus* in *The Field*, December 1912, I had not read Mr. Glover Allan's article in the Harvard College *Memoirs of the Museum of Comparative Zoology* vol. xl. No. 5, though Mr. Oldfield Thomas had informed me of its main contentions. Now having studied it carefully, I find that, though my note in *The Field* requires much explanation and amplification, I cannot agree with Mr. Allan's conclusions that the differences of pelage and spines are due solely to age and season, and are not racial.

In these notes I shall deal entirely with external characters and distribution, leaving a comparative anatomical description till we have fresh or alcoholic material of each form for comparison.

When in 1885 Mr. Oldfield Thomas published his exhaustive review of *Echidna* (*P.Z.S.* 1885, pp. 329-39), modern methods of **Systematic** work had not generally been applied to the Mammalia, and I am sure that he would be the first to acknowledge that we have progressed far beyond the standpoint adopted by him in that article.

In 1905, induced by Dr. K. Toldt's paper published in Vienna (*Verh. K.K. Zoologisch-bot. Gesellschaft* 1905, pp. 5-11) I gave a review of *Zaglossus*; but since then, apart from Mr. Allan's paper, we have learnt much, and the culminating point has been reached by the arrival in Europe of eight living *Zaglossus*, all from a single locality. Before going into the question of the various races of *Zaglossus* a summary of the external characters of the specimens at Harvard which led Mr. Allan to his conclusions are given. A specimen from Mount Arfak (in spirit) is dark brown, deepening on back, spines black with white tips large, fur thick and woolly. Two from Fak Fak : (1) very old, spines mostly white, but a few grey, very flat, hair and spines thinly scattered, colour pale buffy on head, rest blackish brown ; (2) spines large, stout, white, and thickly set, hair thick, coarse brown. Two from Sorong, hair long, thick, coal-black with paler bases, spines dark horn to black. One from Arfak, pelage thick and woolly, spines short. From these facts, at first sight, Mr. Allan's statement that his eight specimens prove that these differences are due to age, season, and possibly sex, would be accepted; but I think the facts that I am bringing forward will tend to disprove it.

However elementary it may appear, I would like to remind my readers that there are numerous degrees of variation, for, while in one species of animal the

local races are well defined, and only overlap at the junctures of their areas of distribution, other creatures in certain portions of their range have developed into races which are clearly defined, while in other portions of their area the factors determining variation seem to be of an indeterminate character, and consequently we find individuals representing all the forms as well as some with mixed characters occurring in one and the same locality; so that we find a subspecies or local race occurring as such in one place, while in another it occurs only as an aberration.

Of Mr. Allan's specimens the Fak Fak ones were bought from natives by the collector, and have an element of doubt as to the place of origin. Sorong is on the south-west portion of Arfak Peninsula, and would be most likely to have more in common with the fauna of the Onin Peninsula, MacCluer's Inlet, etc., than with the fauna of the somewhat isolated Mount Arfak. The first fact I have to bring forward in refutation of Mr. Allan's statements is that we now know of five recent specimens from east of the Fly River, three from German and two from British New Guinea, and they are all identical and are undoubtedly *Zaglossus bruijni bartoni* Thos. On the other hand, the eight living specimens from Kaimana, Charles Louis Mountains, consist of two specimens agreeing with *Z. b. bartoni*, two or three agreeing with *Z. b. nigroaculeata* Rothsch., and the rest being intermediate. This, however, is not wonderful, because although I originally gave the locality of my type of *Z. b. nigroaculeata* as Charles Louis Mountains, I never had definite proof beyond a live-stock dealer's word, and I have from other evidence reason to believe it came from near Sorong. If this were so, Kaimana would be on the border-line between the areas of *Z. b. nigroaculeata* and *Z. b. bartoni*. If the Fak Fak specimens are really from there, we should again have specimens intergrading on the one hand with *Z. b. bruijni* and on the other with *Z. b. nigroaculeata* and *Z. b. goodfellowi* of Salvatty, and this in an intermediate area. The only difficulty which in my mind could arise concerns *Z. b. bruijni* and *Z. b. villosissima*, for we undoubtedly find specimens which have come from Mount Arfak and yet have the extra thick fur and shorter spines which are characteristic of *villosissima*. However, the fact remains that the three more recent specimens of *villosissima* at Tring are all pale brown—almost cinnamon—all over, with whitish heads, while all the Arfak specimens have the dark, blackish brown fur and paler brown heads characteristic of *Z. b. bruijni*. The above-mentioned three *villosissima* were sent over in the last collection received from A. Bruiju, which I bought in 1890 or 1891. In this collection were large numbers of birds and mammals from the islands in, and shores of, Geelvink Bay, and I have little reason to doubt that these three *Zaglossus* were also collected by Bruiju's hunters somewhere on the eastern shores of Geelvink Bay. The specimens at Tring of *Z. b. nigroaculeata* consist of the very large and aged type specimen, a fair-sized one apparently adult, and a young one about three-fifths of the size of the type—i.e. about the size of *Tachyglossus aculeatus lawesi*. The small one has the black, flat spines and sparse, long, coal-black hair of the type, thus proving that the nature of the pelage is **not** a question of age.

At Tring there are three *Z. b. goodfellowi*, and also two *Z. b. bartoni* from German New Guinea, and I have examined these, the two from Kaimana now alive in the London Zoological Gardens, as well as a young Kaimana specimen which was sent me in the flesh. The two living animals are fully adult, and very large, the bigger one measuring from tip of tail over curve of back to tip of snout more

than 1000 mm. ; they have sparse black hair and white spines, while the young one has black spines. I think it may turn out that in all the races the one sex has thicker, more woolly fur than the other; but although we know now of about fifty or sixty specimens, we have not got sufficient specimens sexed in the flesh and with sufficient other data to decide this question.

Finally, although none of my *Z. b. goodfellowi* are black-haired, but seal-brown, and also differ inter se in that the one has the head paler than the back, while the two others have the head and back uniform, they agree with the type in being strongly spined on the belly. The difference from the type in colour is either sexual or these specimens are from a different locality. Mr. Allan states that the **type** of *goodfellowi* was obtained from natives, while Mr. Thomas expressly states that **it** and a **second one** were got by Mr. Goodfellow himself on the island and kept **alive** for some months.

The following are the specimens available for examination in England, as far as I know :

Zaglossus bruijui bruijui Peters and Doria.

1 adult ♀ skin	British Museum.
1 ,, ♂ stuffed and skeleton	,, "
1 ,, ♀ stuffed	Tring "
1 young ♂ skin	,, "

Zaglossus bruijui bartoni Thos.

1 adult ♀ type skin	British Museum.
2 ,, ♂♂, 1 skin, 1 stuffed, and skeleton	Tring "

Zaglossus bruijui villosissima Dubois.

1 adult ♂ stuffed	Tring Museum.
2 ,, ♂ skins	,, "

Zaglossus bruijui goodfellowi Thos.

1 adult ♀ type skin	British Museum.
1 ,, ♀ stuffed	Tring "
2 ,, ♂♂ skins and skeleton	,, "
1 ,, ? ?	either Mr. Goodfellow or Mrs. Johnston.

Zaglossus bruijui nigroaculeata Rothsch.

1 adult ♂ type stuffed, skeleton and soft parts	Tring Museum.
1 fere adult ♀ skin	,, "
1 young ♀ skin	,, "

In addition to these there is a young male from Kaimana mounted in the Tring Museum, which is very similar to the young ♀ of *nigroaculeata*, but has white spines, and two very old specimens (♂ ♀) from the same place living in the London Zoological Gardens with white spines. These three are more or less intermediate between *bartoni* and *nigroaculeata*, which is accounted for by the locality.

The following key to the forms will, I think, help to unravel the confusion :

- 1 { Pelage thick, short and woolly : 2.
 { Pelage sparse, longer, more hair-like and harsh : 4.

- 2 { Colour of head paler than body : 3.
 { Colour of head uniform with body : *Z. bruijni bartoni*. East of the Fly River.
- 3 { Pelage seal-brown to deep brown : *Z. bruijni bruijni*. Mount Arfak.
 { Pelage pale brown : *Z. bruijni villosissima*. East shores of Geelvink Bay and North Coast.
- 4 { Entirely black, spines large, flat, black, grey, or black or grey with white tips ;
 a few long thin spines sometimes on lower flanks : *Z. bruijni nigroaculeata*.
 Sorong, McCluer's Inlet, and Onin Peninsula.
 { Blackish to seal-brown, head somewhat paler, spines large, white and extending
 on to belly and chest : *Z. bruijni goodfellowi*. Salwatty Island.

I think that, from the evidence at present available, we are justified, in opposition to Mr. Allan, in concluding that there are five forms of *Zaglossus bruijni*, each confined to a more or less definite geographical area : but that in the lower north-western portions of the Arfak Peninsula and the foot-hills west of the Fly River the species is still in an unfixd state and that specimens are found there resembling one or the other of the five subspecies as well as all sorts of intergradations. I cannot, however, see why this should invalidate the five forms, which as far as we know occur locally over considerable separated areas.

In the same way I consider that, although in some small areas in Australia we find a mixed race of *Tachyglossus*, there are at least three good localised subspecies of *Tachyglossus aculeata* in addition to *T. a. lawesi* of New Guinea and *T. a. setosa* of Tasmania. When careful comparisons have been made, I even believe that we shall find that the specimens from South-west and North-west Australia and Cape York are also distinct.

I append a key of the five described races.

- 1 { Pelage thick, woolly, and pale cinnamon-brown, spines short, almost hidden, third
 claw stout and long : *T. aculeata setosa* Tasmania.
 { Pelage sparser, more hair-like, dark brown or yellowish, third claw small : 2.
- 2 { Pelage thicker, spines medium very thick black-brown or grey and white :
T. aculeata aculeata New South Wales and South Queensland.
 { Pelage thinner or almost absent except on belly : 3.
- 3 { Size small, spines long and dense, white marked with brown or grey, hair
 brown : *T. aculeata lawesi* S.E. New Guinea.
 { Size large : 4.
- 4 { Pelage almost absent except on belly, brown, spines long, thick and dense,
 white with brown markings or black with white tips : *T. aculeata acanthion*,
 Northern Territory of South Australia.
 { Pelage well developed, long, yellowish, spines long, thin and very dense,
 white : *T. aculeata multiaculeata* Southernmost South Australia.
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